SECTION 6

ELECTRONIC REPORTING OF 305(b) ASSESSMENTS

6.1 Background

As described in Section 1 and Figure 1-1 of these *Guidelines*, electronic updates are important components of the updated 305(b) reporting cycle and of Performance Partnership Agreements between the States and EPA.

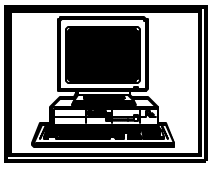
Sections 6.2 through 6.7 present information on electronic reporting including a detailed list of data elements. These sections are based on the recommendations of the 305(b) Consistency Workgroup in October 1996. Section 6.8 discusses acceptable formats for transmitting data files. Section 6.9 gives a set of "data rules" for States not using the EPA Waterbody System to help ensure that EPA can use and properly interpret their data.

6.2 Importance of Electronic Updates

In order for the updated 305(b) reporting cycle to succeed, EPA and the 305(b) Consistency Workgroup agree on the need for periodic, electronic updates from the States on their waterbody-level assessments. Such updates are important for two reasons:

- EPA needs the assessment data for biennial reports to Congress, Clean Water Act reauthorization, and other national planning activities

Assessment Database Managers—EPA recognizes that annual electronic reporting is a new approach. If you have questions about the contents of electronic reports or changes that might be needed in your database, please call the National 305(b) Coordinator or WBS User Support at the numbers on page ii. Also, please pay special attention to text boxes with this PC logo. These boxes contain important information on improving the data quality and completeness of your databases, whether WBS or customized.



- Water quality assessments and data management should be ongoing activities, not performed in haste just prior to preparation of a 305(b) report.

6.3 Contents of Electronic Updates

The bulk of a State's electronic update will consist of waterbody-level assessment data for assessments completed in previous calendar year(s). These data files can be EPA Waterbody System (WBS) files or State-developed database or spreadsheet files. If a State uses a customized assessment database rather than WBS, data files must be provided in a form that EPA can convert to standard 305(b)/WBS codes. Nearly 40 States transmitted their assessment databases in electronic form during 1994-95.

Some States have indicated they would prefer to send their updated **statewide** 305(b) assessment databases rather than only data for waterbodies assessed in the previous year. This may be more convenient for the State and would help ensure that EPA is working with the latest, complete dataset. This practice is acceptable provided assessment dates are included for each waterbody. If the State is using a probability-based monitoring network, include waterbody-level data for that network in the assessment database but report overall network results in the hard-copy 305(b) reports.

Table 6-1 lists the data elements that States should include for each waterbody. With the exception of the biological integrity fields, WBS and most State in-house programs already contain these data elements. EPA will modify WBS to include new fields required by these *Guidelines*. The voluntary pilot biological integrity indicator is explained further in Section 4 of the *Guidelines Supplement*. Methods for biological integrity of streams and rivers are available and methods for lakes and estuaries will follow in subsequent years.

Appendix D of the *Guidelines Supplement* contains a data dictionary for the data elements in Table 6-1. For information on other data elements the State may wish to track, see the data dictionary in the *WBS Users Guide* available from the Regional or National WBS Coordinators.

In addition to the data elements in Table 6-1, a State's electronic update should also include:

- A GIS coverage showing assessment results since last update or hard-copy maps showing assessment results

Table 6-1. Key Data Elements for Electronic Updates (with national WBS codes)[a]

Descriptive Information for Each Waterbody

WBID	Waterbody identification number
WBNAME	Waterbody name
WBTYPE	Waterbody type (river, lake, etc.)
WBSIZE	Waterbody size
WBUNIT	Size units (miles, acres, square miles)
WBCU	USGS 8-digit Cataloging Unit number
WBSCS	NRCS small watershed number
WBLOCN	Location text (optional)
WBSIGLAKE	Significant lake? (yes or no)
ASDATE	Assessment date
ASCYCLE	Assessment cycle (1994, 1996, 1997, etc.)
ASWQLTD	Water quality limited? (optional)
ASTMDL	On 303(d) list? (optional)
ASBDATE	Begin sampling date
ASEDATE	End sampling date

Use Support Data for Each Waterbody for Each Use*

USE	Use code (20 = Aquatic Life, etc.)
FULLY	Size fully supporting this use
THREAT	Size threatened for this use
PARTIAL	Size partially supporting this use
NOTSUPP	Size not supporting this use
NOTATTAIN	Size that cannot attain this use
NOTASS	Size not assessed

* At a minimum, include all national use categories that apply to the waterbody (aquatic life, drinking water, swimming, fish consumption, secondary contact, shellfishing, cultural/ ceremonial, agriculture); see "Designated Use Support" in Section 4 of these *Guidelines*.

Biological Integrity Indicator*

EXCELL	Size of waterbody rated Excellent
VERY	Size of waterbody rated Very Good
GOOD	Size of waterbody rated Good
FAIR	Size of waterbody rated Fair
POOR	Size of waterbody rated Poor
NUMSITES	Number of biomonitoring sites sampled for this assessment

*Voluntary pilot indicator; see *Guidelines Supplement* Section 4

(see also "Assessment Metadata" below for data elements that apply to this indicator)

Table 6-1. Key Data Elements for Annual Electronic Updates[a] (cont'd)

Cause/Stressor Data for Each Waterbody	
ASCAUSE	Cause/stressor code: 0100 Unknown toxicity 0200 Pesticides C C 2700 Biodiversity impacts
ASCASIZ	Size affected by each cause
ASCAMAG	Relative magnitude of each cause
Source Data for Each Waterbody	
ASSOURC	Source codes—major categories at a minimum: 0100 Industrial Point Source 0200 Municipal Point Source 0400 CSO C C 9050 Sources outside State jurisdiction
ASSOSIZ	Size affected by each source
ASSOMAG	Relative magnitude of each source
Assessment Metadata	
ASTYPE	Assessment type codes such as 120 = surveys of fish/game biologists 321 = RBP III benthos surveys 610 = Calibrated models
ASCMTS	Comments on the assessment
BIO_LEVEL	Biological assessment level of information[b]
HAB_LEVEL	Habitat assessment level of information[b]
PC_LEVEL	Physical/chemical assessment level of information[b]
TOX_LEVEL	Toxicity assessment level of information[b]

[a]See Appendix D of the *Guidelines Supplement* for a data dictionary and see the *WBS Users Guide* for more details.

[b]Data elements described in Section 3 of the *Guidelines Supplement*.

- A GIS coverage or map showing how and when the State plans to achieve comprehensive assessment of the State's waters

- Descriptive information about the data files (database manager's name, phone number, agency, period covered (calendar year, water year, etc.) and a brief data dictionary)

- Updates of significant developments, additions, or changes in ground water quality assessments using database, spreadsheet, or word processing format

- Updated Clean Lakes tables (Tables 4-6 through 4-11) only if conditions in significant publicly owned lakes changed in the previous year.

6.4 Reporting Frequency

States and Tribes with existing electronic reporting capability are encouraged to transmit their 1997 electronic updates by the end of December 1997. In even-numbered years beginning in 1998, annual electronic updates are due April 1 with the abbreviated narrative reports. In odd-numbered years, annual electronic updates should be transmitted to EPA in April if possible, although they can be transmitted over the summer. These updates can consist of (1) assessment data for only those basins or USGS CU watersheds assessed in the previous calendar year, or (2) the entire statewide database as updated. For States doing rotating basin monitoring, annual electronic reporting should not be a problem if States keep their assessment databases up-to-date.

If a State is unable to transmit an electronic update of its assessment data in a given year, the State should send a biennial electronic update by April 1 of the following year covering waters assessed in the previous two calendar years.

6.5 Focus for 1997: Improving Data Quality

In 1996, EPA analyzed the States' electronic assessment databases. Several recurring issues came to light during this process. As a result, the Workgroup recommended the following ways to improve the quality of assessment data at the State and national levels.

***Provide descriptive information*—**EPA needs certain information to properly interpret the States' assessment results. All States should track such data in their databases to inform EPA of the sources and quality of their data. As a first step for 1998, each State should:

- Track Assessment Type Codes and Assessment Levels (see *Guidelines Supplement* Sections 1.3 and 3.1)

- Provide a brief dictionary of the data elements and codes in its assessment database, including any variations from standard national 305(b) data elements and codes and how the cause/stressor magnitude and source magnitude codes are used

***Provide complete data*—**States should include all needed data elements. Missing data were a big problem in 1994-95. The most obvious problem is missing size data *at the waterbody level:*

- Size affected by the major source categories (e.g., "acres impaired by Agriculture)

- Size fully supporting, partially supporting, etc., each designated use ("e.g., miles fully supporting Aquatic Life")

Another data gap is missing lakes data from some States. To eliminate the above problems with missing data, EPA will give feedback to each State through the Regions on data missing from the 1996 and future assessment databases.

6.6 Reporting Ground Water Quality Data Annually

In the 1996 305(b) *Guidelines*, EPA for the first time encouraged States to assess ground water quality for selected aquifers or hydrogeologic settings within the State that reflect State ground water management priorities. Using these *Guidelines*, States achieved improved reporting on ground water quality within the 305(b) program. Several States noted that the 1996 *Guidelines* provided incentive to modify their ground water programs to enhance their ability to provide more accurate and representative information.

Recognizing this progress, EPA is working with States to maintain continuity and momentum in assessing the quality of our Nation's ground water. As part of this effort, EPA is continuing to request that States assess ground water quality for selected aquifers or hydrogeologic settings. Although EPA recognizes that the Clean Water Act requests that States report this information biennially, EPA encourages States to report this information annually to ease the reporting burden. Reporting on an annual basis will encourage development of innovative methodologies for data collection, improve overall reporting, and lessen the level of effort needed to produce 305(b) reports.

If States opt to report annually, they may consider using a rotating monitoring approach described in the introduction to Section 5. Using this approach, the State is divided into areas and ground water quality in each area is evaluated and reported on an annual basis. An increasingly greater portion of the State is assessed with each successive year. If States decide against implementing the rotating monitoring approach, they may opt to report significant developments or changes in ground water quality on an annual basis.

States are asked to provide annually or biennially the information using Tables 5-1 through 5-4. The submittal of narratives and accompanying text on an annual basis is left to the discretion of the State as to whether they are needed to support the information provided in the four tables. States can transmit these tables in database, spreadsheet, or word processing format.

6.7 Staff Needs

EPA and the 305(b) Workgroup concluded that water quality assessments and data management must be *ongoing* activities. Key staff needs include:

- Short term—each State needs **at least** 1 full time staff member devoted to doing assessments and managing the data year-round; typically, such staff can also do assessments and reporting for basin plans

- Short term—each 305(b) Coordinator needs access to e-mail, the World Wide Web, and file transfer on the Internet (e.g., FTP)

- Long-term—each 305(b) Coordinator needs access to GIS support and global positioning system (GPS) capability; in the meantime, EPA will provide support for producing maps when feasible

6.8 File Format and Transfers

Data files will consist of State 305(b) assessment databases or subsets—i.e., each State will send its updated WBS database or other State assessment database.

For ground water tables, States may choose whatever format is easiest for them, e.g., spreadsheets, databases, or word processing tables.

States can transmit electronic updates to EPA via diskettes, e-mail, FTP through the Internet, high-capacity disks, or tapes. Most States send data on diskettes, although five States sent their 1996 data via e-mail.

6.9 Special Information for Non-WBS States

This section includes essential "data rules" to ensure that EPA can use the data files from customized State assessment databases. It also includes helpful hints for States that are redesigning their assessment databases. Following these "rules" will help ensure that EPA properly interprets State data for Reports to Congress and for initiatives such as *Surf Your Watershed* on the World Wide Web and the Index of Watershed Indicators project. See Section 1 for descriptions of these initiatives.

States that follow these "rules" will also be able to prepare accurate summary tables such as those in Section 4 of these Guidelines. Assessment managers should compare the following items to their existing spreadsheets or databases to identify any potential problems in generating summary tables, or problems that EPA may be having in properly interpreting their data. Contact WBS User Support at the telephone number on page ii for more information.

Modern relational database programs for PCs are well suited to the large waterbody databases and reports required in the 305(b) process. In addition, WBS and customized State relational databases offer more powerful querying capabilities than spreadsheets. However, several States use spreadsheets successfully to track their assessment results.

Spreadsheets are suitable for this purpose if properly designed. Tables 6-2 and 6-3 show a suggested format that closely resembles the WBS (dBASE)-type files. Such a format facilitates data transfer to EPA national databases and also promotes accurate State summary reports for 305(b). Problems arise with the traditional spreadsheet format in which all information for a waterbody is contained in a single row; this format results in very wide spreadsheets and makes summary reports difficult. Some difficulties may be alleviated by breaking up the wide table into workbooks or sub-tables. Contact WBS User Support at the number on page ii for more information.

General WBS-type 'Rules' (for both spreadsheets and databases)

1) The data files need to provide an assessment of all waterbody types (rivers, lakes, estuaries, coastal waters, etc.) with sizes (not placeholders marked with 'X', etc.), and should avoid presenting a list of the problem waters only.

2) The 'key' assessment data elements needed for the use support, causes/stressors, and sources of pollution summary tables must be provided for each waterbody (see Table 6-1).

3) Waterbodies should be located in rows with all assessment information in columns.

4) Waterbody IDs must be unique in order to avoid double counting in creating summary tables.

5) Each waterbody type (river, lake, estuary, etc.) must be clearly defined -- specifying the waterbody type in the waterbody name or waterbody ID is not sufficient for data aggregation purposes at the national level.

*6) Column headings should resemble the key data elements for electronic updates defined in **Table 6-1**, as well as the already defined codes for use support, causes/stressors, and sources, etc. If this is not possible, a data dictionary table must be provided equating the column headings with the WBS fields. Keeping the column headings length up to nine characters will aid EPA in conversions to other database engines.*

7) Columns should be either numeric or character fields but not both.

8) Only a single entry in a cell is allowed (number or character), with no comma-delimited entries. Waterbody name, ID, location, etc. must not be collapsed together in a single spreadsheet/database cell. Similarly, only one cause or source code should appear in a given cell.

9) A single magnitude code must be associated with a cause/stressor or source code. E.g., the same waterbody should not be shown as both "Major" and "Moderate" for Agriculture.

10) A single monitoring category (Evaluated, or Monitored) must be associated with a particular waterbody size.

11) Uniform units must be used throughout the spreadsheet/database depending on the waterbody type, for example: miles for river and streams, acres for lakes.

12) Each assessment for a waterbody must have an assessment date (ASDATE).

13) Word processing files are not acceptable because they usually cannot be converted to a database format.

(tables not available in electronic form)

Table 6-2. **Recommended format for use support data for States that opt for spreadsheets**.

Table 6-3. Recommended format for source data for States that opt for spreadsheets.